

REMARKS

I. Restriction Requirement

In the subject Office Action, the Examiner stated the following: "Applicant's election without traverse of claims 1-4 and 6-8 in reply filed on 7/29/05 is acknowledged". For clarification, Applicants elected Group I, specifically claims 1-12 and 23-30, without traverse, and withdrew Group II, specifically claims 13-22, without prejudice. This agrees with the line 6 of the Disposition of Claims in the subject Office Action, wherein the Examiner states that claims 1-4, 6-12 and 23-30 are rejected and that claim 5 contains allowable subject matter.

II. Claim Rejections under 35 U.S.C. §102(b)

In the subject Office Action, claims 1-4, 6-8 and 10-12 were rejected under 35 U.S.C. §102(b) as being anticipated by Hamilton et al. ("Hamilton"). The Examiner also indicated that dependent claim 5 would be allowable if rewritten in independent form including all the limitations of the base claim and intervening claims.

In response, Applicants have amended the claim 1 to include the recitations of original dependent claim 4 and part of original dependent claim 5 (but not the recitations of the rest of original dependent claim 5), original dependent claim 2 or original dependent claim 3. Claim 4 was cancelled. More specifically, amended claim 1 now includes the following recitation:

"the cooling device including a cooling plate having a first and a second cooling plate side and a plurality of interconnected channels being formed in the first cooling plate side, with the first cooling plate side being directly bonded to the die surface by a semiconductor material-to-semiconductor material bond to enclose the plurality of interconnected channels to form a plurality of liquid-conducting passages"

Accordingly, claim 1 is distinguishable over the cited references for at least the following reasons:

(A) It now explicitly recites the IC as having “a cooling plate” (previously recited in dependent claim 5), which has been indicated by the Examiner as allowable subject matter.

(B) The IC die is further defined to be “directly bonded to the die surface by a semiconductor material-to-semiconductor material bond” (previously recited in original dependent claim 5 as a “silicon-to-silicon bond”). Hamilton does not disclose a direct bond between the die 12 and the substrate 14.

In further response to the Examiner’s rejections, dependent claims 6-8, directed toward the embodiment of Figures 4A and 4B of Applicants’ drawings, have been cancelled. In place of cancelled dependent claim 6, new independent claim 31 is submitted, which includes the recitations of the original dependent claim 6, along with intervening original claims 1 and 4 and part of original claim 5. Additionally, the following additional recitation is included in new independent claim 31:

“the cover plate and the cooling plate each including a width and a length dimension substantially equal to a width and a length dimension of the die surface”

To the contrary, Hamilton discloses a cover plate in the form of a substrate 14 with a plurality of dies 12 mounted thereon. Hence, the width and length dimensions of substrate 14 and the configuration of microchannels 16 are very large relative to a given die 12. In other words, the recitation of new independent claim 31 define a cover plate and cooling plate which extend over the die surface in a manner to provide two additional layers to the die having substantially the width and length dimensions of the die surface, so as to distinguish claim 31 over the substrate 14 and channel closure member 26 of Hamilton which form a platform for a plurality of dies 12.

III. Claim Rejections under 35 U.S.C. §103

In the subject Office Action, claims 9 and 23-30 were rejected under 35 U.S.C. §103(a) as being obvious over Hamilton in view of that which is well known in the prior art.

With respect to dependent claim 9, Applicant submits amended claim 1 is patentable over Hamilton even under 35 U.S.C. §103(a), for at least the same reasons

as presented above. Claim 9 is dependent from amended independent claim 1 and incorporate its limitations. Therefore, for at least the same reasons, claim 9 is patentable over Hamilton.

With respect to independent claim 23, claim 23 includes the same recitations as found in amended independent claim 1, in addition to additional system recitations of an IC package, PCB, dynamic random access memory, and an input/output interface. Therefore, for at least the same reasons as presented above for amended independent claim 1, claim 23 is patentable over Hamilton when combined with that art which the Examiner asserts is known in the prior art.

V. Conclusion

In view of the foregoing, Applicants submit claims 1-3, 5, 9-12, 23-25, 27 and new claims 31-34 are in condition of allowance. Early issuance of Notice of Allowance is respectfully requested. Claims 4, 6-8, 26, and 28-30 have been cancelled.

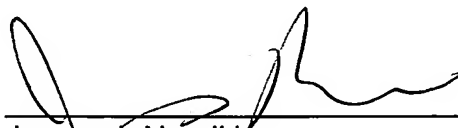
The Commissioner is hereby authorized to charge shortages or credit overpayments to Deposit Account No. 500393.

Respectfully submitted,

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